

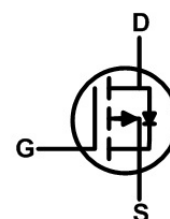
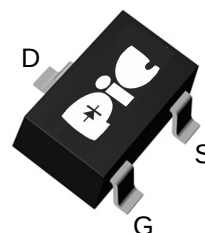
➤ General Description

This PAP4019ANS P-Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent $R_{DS(ON)}$ performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

➤ Feature

- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23S package design

➤ SOT-23S



➤ Application

- Load Switch
- DC-DC System

➤ Absolute Maximum Ratings

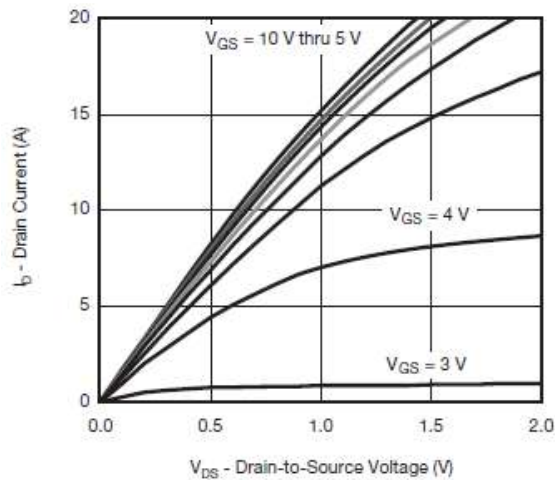
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	-40	V
Gate –Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current($T_J=150^\circ C$)	$T_A=25^\circ C$	I_D	-3.0	A
	$T_A=70^\circ C$		-2.4	
Pulsed Drain Current		I_{DM}	-12	A
Continuous Source Current(Diode Conduction)		I_S	-1.0	A
Power Dissipation	$T_A=25^\circ C$	P_D	1.25	W
	$T_A=70^\circ C$		0.8	
Operating Junction Temperature		T_J	150	$^\circ C$
Storage Temperature Range		T_{STG}	-55/150	$^\circ C$
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	120	$^\circ C/W$

➤ **Electrical Characteristics ($T_A=25^\circ C$ Unless otherwise noted)**

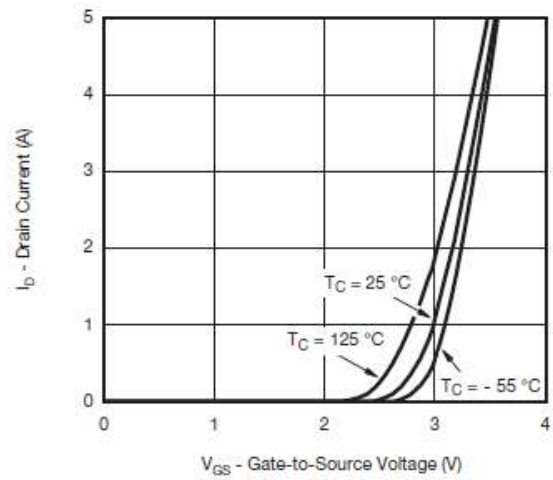
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0		-2.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-32V, V_{GS}=0V$			-1	uA
		$V_{DS}=-32V, V_{GS}=0V$ $T_J=85^\circ C$			-30	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\leq -5V, V_{GS}=-10V$	-6			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3.0A$		75	90	m Ω
		$V_{GS}=-4.5V, I_D=-2.4A$		100	120	
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-3.0A$		8		S
Diode Forward Voltage	V_{SD}	$I_S=-1.25A, V_{GS}=0V$		-0.75	-1.3	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=-20V, V_{GS}=-4.5V$ $I_D \equiv -3.0A$		5	10	nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			2.5		
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V$ $f=1MHz$		500		pF
Output Capacitance	C_{oss}			65		
Reverse Transfer Capacitance	C_{rss}			50		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-20V, R_L=8\Omega$ $I_D \equiv -2.5A, V_{GEN}=-4.5V, R_G=1.0\Omega$		25	50	ns
	t_r			15	30	
Turn-Off Time	$t_{d(off)}$			10	25	
	t_f			10	25	

P-Ch -40V Fast Switching MOSFET
 $V_{DS} = -40V$, $I_D = -3.0A$, $R_{DS(on)} = 100m\Omega$

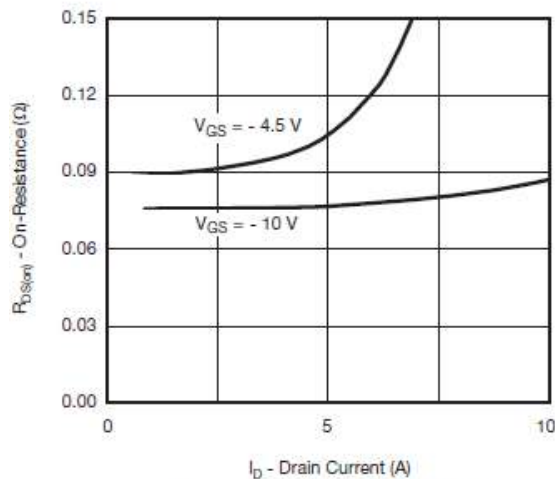
➤ Typical Characteristics



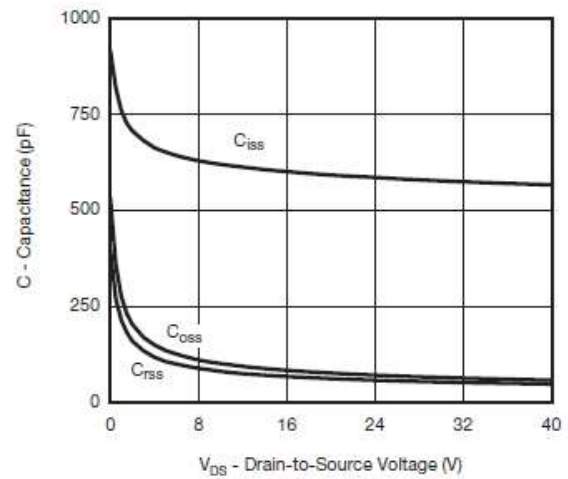
Output Characteristics



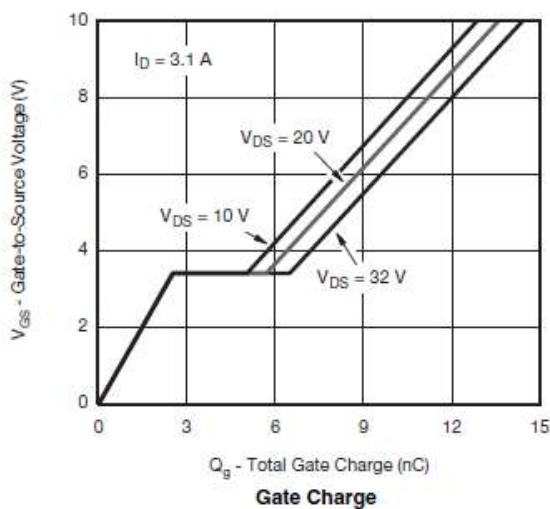
Transfer Characteristics



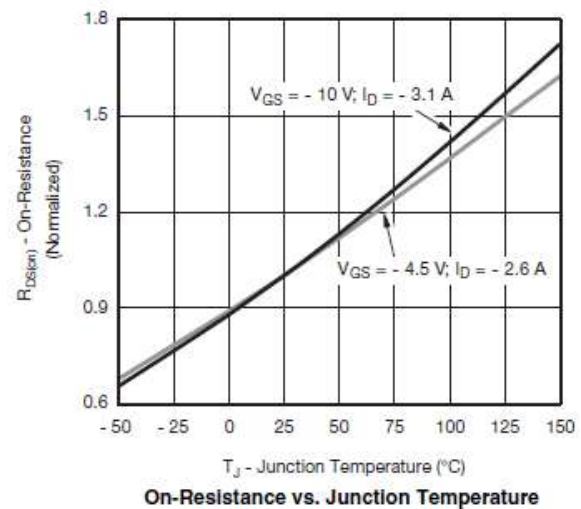
On-Resistance vs. Drain Current



Capacitance

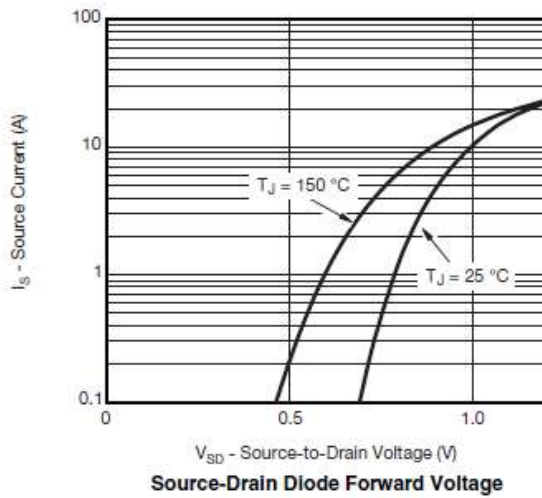


Gate Charge

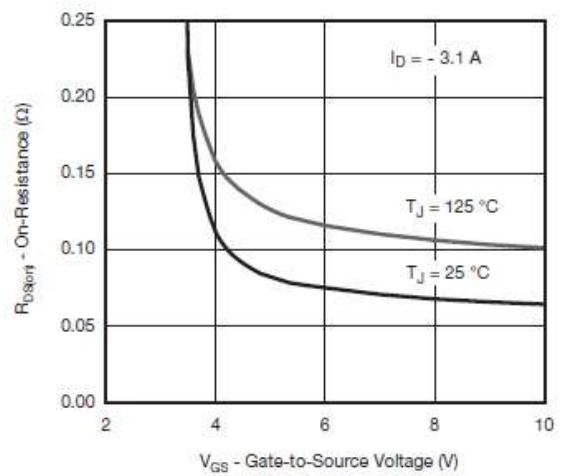


On-Resistance vs. Junction Temperature

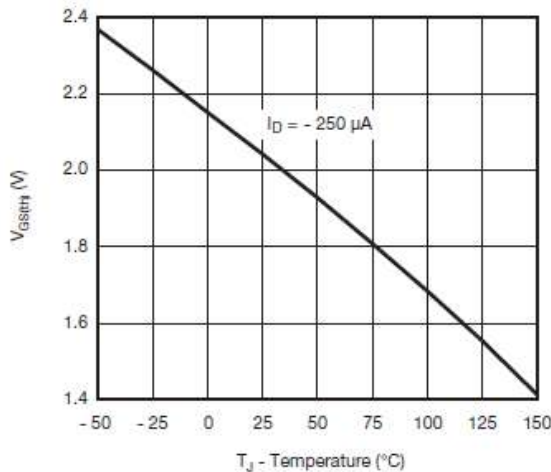
P-Ch -40V Fast Switching MOSFET
 $V_{DS}=-40V$, $I_D=-3.0A$, $R_{DS(ON)}=100m\Omega$



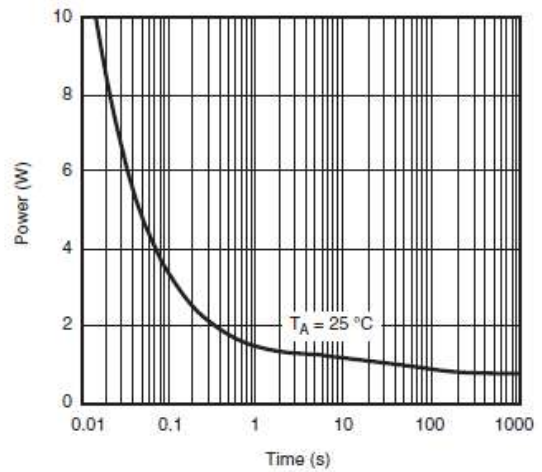
Source-Drain Diode Forward Voltage



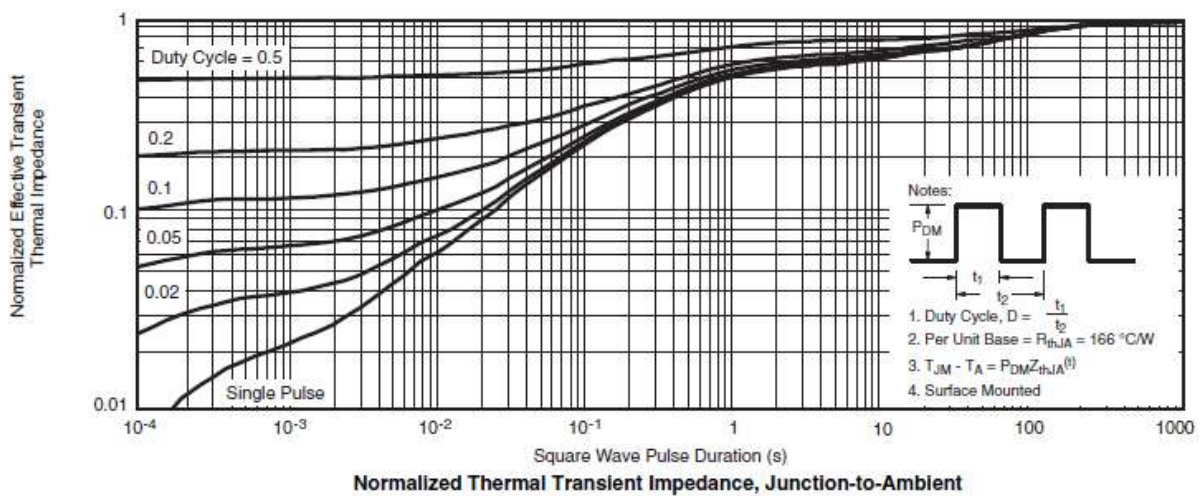
On-Resistance vs. Gate-to-Source Voltage



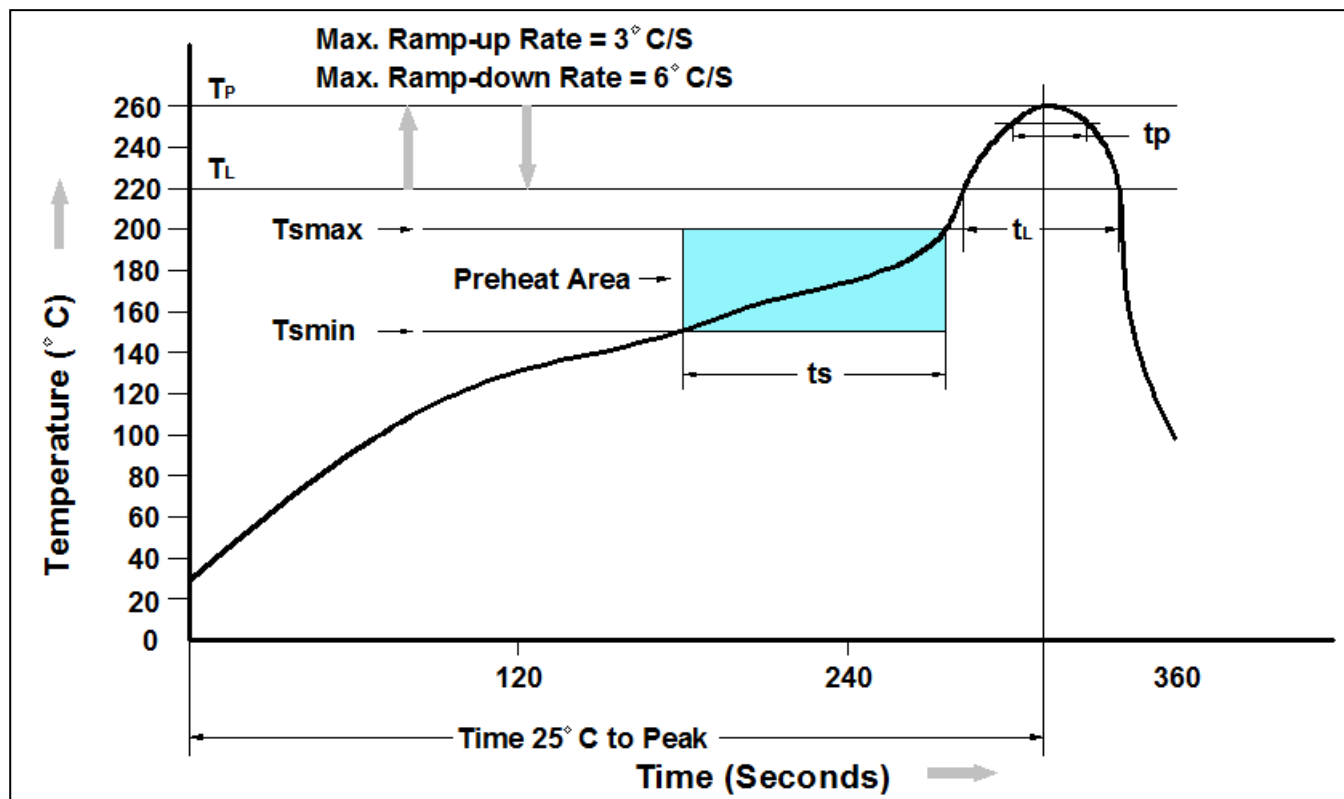
Threshold Voltage



Single Pulse Power (Junction-to-Ambient)



➤ Recommand IR Reflow Soldering Thermal Profile



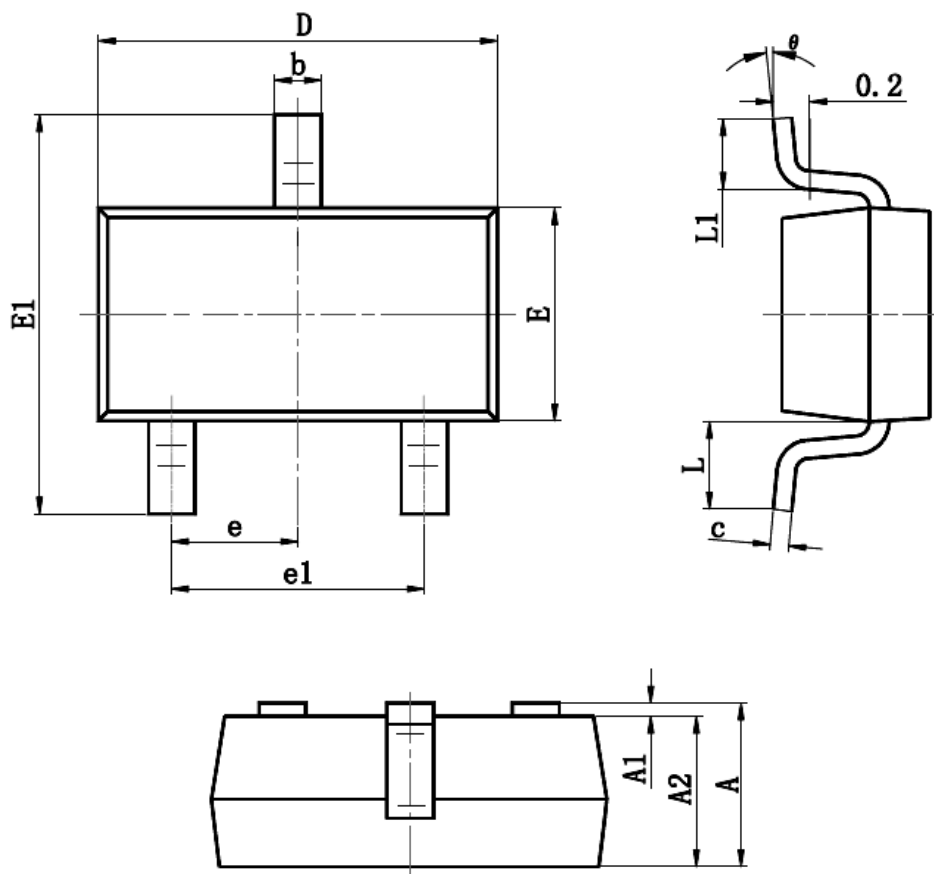
Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds
Average Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (t_P) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

➤ Ordering Information

Part Number	Description	Quantity
PAP4019ANS	SOT-23S Reel	3000 pcs

P-Ch -40V Fast Switching MOSFET
 $V_{DS}=-40V$, $I_D=-3.0A$, $R_{DS(ON)}=100m\Omega$

➤ Package Information (SOT-23S)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

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